MiG-31 - FOXHOUND

DATA AS OF 2023 (standard replenishment)
MiG-31 / product 01 - FOXHOUND
MiG-31BM / product 01BM - FOXHOUND
★★★★
MiG-31 registry - FOXHOUND

Long-range fighter-interceptor - the first Soviet fourth-generation fighter. Development of fighter variants to replace the MiG-25P was carried out since 1965. The project of a heavy interceptor E-155PA with R-15BF-300 engines and Smerch-100 radar, armed with K-100 missiles, was studied . Since 1966, development of a two-seat multipurpose aircraft E-155M - the prototype of the MiG-31 - began. In 1968, TsAGI issued recommendations on the new aircraft. In 1972, the tactical and technical requirements were formulated with an emphasis on increasing the flight range and duration of the interceptor's patrol. One of the aircraft variants was supposed to be equipped with a variable geometry wing with two RD-36-41M engines developed by OKB-36 MAP (chief designer - P.A. Kolesov). After the requirements were set for the possibility of conducting semi-autonomous actions to intercept targets in the absence of a continuous radar field, a preliminary design for the E-155MP interceptor was developed in 1972. The general designer was R.A. Belyakov. Until 1976, the chief designer of the E-155M was G.E. Lozino-Lozinsky, in addition to him, the group of main developers included V.A. Arkhipov, K.K. Vasilchenko and A.A. Belosvet. From 1978 to 1985, the chief designer was K.K. Vasilchenko, later - A.A. Belosvet and E.K. Kostrubsky.

The experimental prototype E-155MP / MiG-25MP (side No. 831, product 83/1) was manufactured by the experimental production of the MiG Design Bureau (the A.I. Mikoyan MMZ Plant, Moscow) in the spring of 1975. The first flight was performed at the Flight Research Institute airfield in Ramenskoye on September 16, 1975 (pilots - A.V. Fedotov and V.S. Zaitsev). The second copy E-155MP-831 with the Zaslon radar complex entered testing in 1976. Two copies of the E-155MP aircraft took part in the first stage ("stage "A") of joint state tests.

MiG-31BM with R-73 and R-33 missiles at the airbase in Kansk, 25.12.2012 (photo - Vladislav Belogrud, http://ria.ru).

Author: DIMMI Created: 18.10.2010 02:43:26 Comments: 199 READ THE FULL ARTICLE

X-31 - AS-17 KRYPTON

DATA FOR 2023 (in progress)
X-31P / product 77P - AS-17C KRYPTON
X-31PD / product 77PD - AS-17D KRYPTON X-31A / product 77A - AS-17A KRYPTON X-31AD / product 77AD - AS-17B KRYPTON Target MA-31

★★★

Anti-ship and anti-radar missiles. The missile was developed by the Zvezda Design Bureau (now the Zvezda-Strela State Research and Production Association, Chief Designer G.I. Khokhlov) as a replacement for the Kh-27PS anti-radar missile , which did not meet the requirements of the USSR Air Force for launch range and the ability to counter the missile of enemy air defense missile systems (the Kh-27PS lost its target when the air defense missile system radar was turned off). The development of the anti-radar missile began in 1975 under the supervision of V. Bugaisky. The

missile was intended to destroy the Improved Hawk and Nike Hercules air defense missile systems. Due to its high flight speed (750 m/s when launched at a range of 25 km from a low altitude), in the case of the Improved Hawk air defense missile system, the missile was supposed to hit the target before the anti-aircraft missiles could hit the carrier aircraft. When working against the Nike Hercules air defense missile system, it was supposed to operate without entering the air defense missile system's kill zone. To achieve high speed, it was It was decided to use a ramjet for launching which a solid propellant rocket booster placed in the nozzle of the cruise engine would be used. The maximum launch range was supposed to be 60 km and the missile weight - no more than 400 kg. When creating the missile, it was planned to arm it with attack aircraft such as the MiG-27, Su-17M and Su-24, each of which was to have at least two missiles.

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It turned out to be impossible to create a missile with a ramjet engine with a weight limit of 400 kg, and a larger medium-range missile was developed with the ability to destroy the promising SAM-D ("Patriot") air defense missile system, as well as surveillance radars operating in the B and C frequency ranges. For an expanded range of targets, the Omsk NPO "Avtomatika" was given the task of designing three seeker heads (PRGS-4VP, PRGS-5VP and PRGS-6VP) operating in these ranges.

In 1978, the USSR Council of Ministers issued a Resolution on the development of an anti-ship version of the Kh-31 missile, called the Kh-31A. The anti-ship missile was designed to destroy surface ships with a displacement of up to 4,500 tons. The missile was equipped with an active radar homing head and a penetrating warhead instead of a high-explosive fragmentation warhead. The draft design was approved in 1979.

Factory flight tests of the Kh-31 missiles began in May 1982 from the MiG-27M carrier aircraft. The Pr1 and Pr2 versions of the missiles were tested, as well as full-size mock-ups of the Kh-31 missile to test the emergency release. The Kh-31Pr1 missile was equipped with a launch solid-propellant rocket motor and a mock-up of a ramjet - the release, launch of the launch solid-propellant rocket motor and flight on the launch section were tested. The Kh-31Pr2 missile was equipped with a working launch solid-propellant rocket motor and a sustainer ramjet - the missile launch, launch and sustainer flight, and stabilization of the missile on these flight sections were tested with the missile.

Anti-radar missile Kh-31PD (photomontage, https://ktrv.ru/).

Author: DIMMI Created: 15.02.2023 15:17:09 Comments: 1 READ THE FULL ARTICLE

M-4 BISON

UPDATE, ILLUSTRATIONS (data for 1997)
M-4 "Hammer" BISON-A, B, C

Strategic bomber developed in OKB-23 under the supervision of V.M. Myasishchev under the project "25" (M-25). R & D since March 24, 1951. The M-4 prototype made its first flight on January 20, 1953 (pilots - F.F. Opadchiy, A.N. Gratsiansky, navigator - A.I. Pomazunov, radio operator - I.I. Rykhlov, flight engineer - G.A. Nefedov, leading engineers - I.N. Kvitko and A.I. Nikonov). By the Decree of the Government of the USSR dated September 19, 1953, Plant No. 23 was ordered to build an experimental series - 3 units in 1954 and 8 units. in 1955. Testing of the second aircraft began on December 23, 1953. Factory tests ended on April 15, 1954, and on the same day the aircraft was accepted for state tests, but they actually began on May 4, 1954. On May 1, 1954, the experimental M-4 was shown at a parade over Red Square in Moscow. Serial production of the M-4 began in 1954 at the OKB-23 plant in Fili (plant No. 23 near Moscow). In 1955, the aircraft underwent military tests at the air base in Engels. Since 1975, the aircraft has been decommissioned as a bomber.

Author: DIMMI Created: 19.08.2009 23:50:36 Comments: 20 READ THE FULL ARTICLE

An-124 Ruslan - CONDOR

DATA AS OF 2023 (standard replenishment)
An-124 / An-124-100 "Ruslan" / product 400 - CONDOR
★★★

Heavy transport aircraft. Developed by the Antonov Design Bureau (now the Antonov State Enterprise, Ukraine), chief designer - P.V. Balabuev. After information appeared about the development of the wide-body heavy transport aircraft C-5A Galaxy in the USA, the CPSU Central Committee and the Council of Ministers of the USSR in Resolution No. 564-180 of July 21, 1966 "On the main directions of development of aviation equipment and weapons for 1966-1970" set the task of creating transport aircraft with a carrying capacity of up to 100-120 tons. In pursuance of this Resolution, the Kiev Mechanical Plant (later the Antonov Design Bureau, now the Antonov State Enterprise) began developing designs for a new aircraft.

In 1967, the technical design "122" was presented, which was a development of the An-22. Three years later, the design bureau presented preliminary designs for two more aircraft: the four-engine An-124 (carrying capacity of 120 tons) and the six-engine An-126 (carrying capacity of 140 tons). In February 1972, a decision was made to implement the "124" project. It provided for the transfer of almost the entire range of equipment and weapons of the Ground Forces, Air Force, Air Defense, and even the Strategic Missile Forces. In terms of estimated transport potential, the An-124 project exceeded the American C-5A Galaxy by 25% (source).

As a result, the creation of a heavy transport aircraft was started to support large-scale operations of the USSR Airborne Forces, as well as to transport missile systems of various purposes, including the Pioneer IRBM and the Topol ICBM. The first flight of the An-124 prototype was made on December 24, 1982 in Kiev. Serial production began in 1984 at the Antonov Design Bureau in Kiev and was later deployed in Russia at the Ulyanovsk aircraft plant (ZAO Aviastar-SP). In January 1987, the aircraft was accepted into service with the military transport aviation of the USSR Air Force and began to be delivered to

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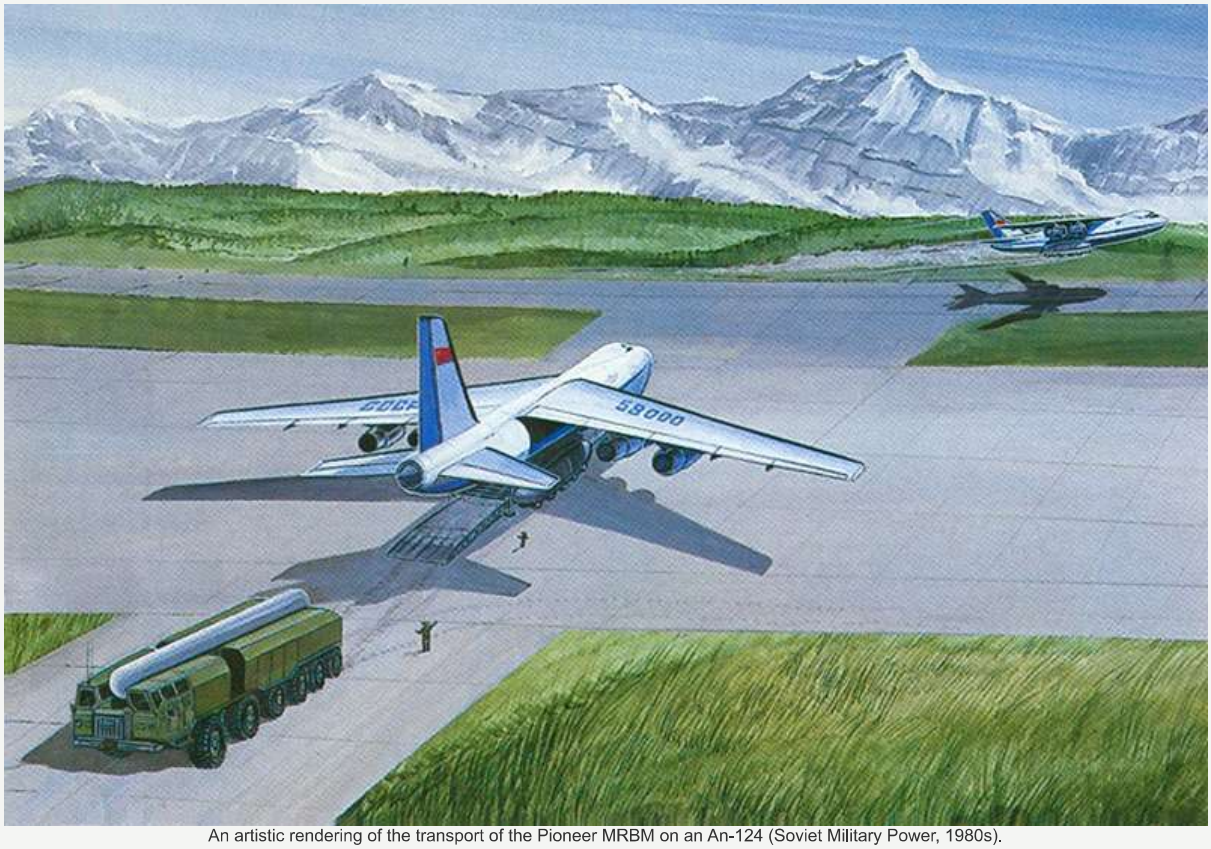
Serial production in Russia was carried out at ZAO Aviastar-SP in Ulyanovsk until 2004. In February 2006, preparations began to resume serial production of the aircraft at OAO Aviastar, but by the summer of 2006 the program was frozen. A total of 56 aircraft were built during this entire period. The An-124 set 30 world records for payload, altitude with commercial payload, speed and flight range.

In the West, before its first public display, the project was known as "An-40 CONDOR". By default, the An-124 / An-124-100 data is given.



An artistic rendering of the transport of the Pioneer MRBM on an An-124 (Soviet Military Power, 1980s).

Author: DIMMI Created: 11.02.2012 22:58:39 Comments: 14 READ THE FULL ARTICLE

Mi-28N - HAVOC-B

DATA AS OF 2013 (standard replenishment)
Mi-28N "Night Hunter" / product 294 / R&D "Avangard-2" - HAVOC-B
Mi-28NM
★★★★
Author of the original article : Dmitry Mironov (Butcher171), St. Petersburg, 2011.

Register of Mi-28N helicopters - HAVOC-B

All-weather night-day attack helicopter. In 1993, after the completion of the first stage of state tests of the Mi-28A attack helicopter, a preliminary conclusion was received on the release of an initial batch of helicopters equipped with a set of equipment and weapons for use in daytime and limited-difficult weather conditions. However, M.V. Weinberg, who by that time had become the General Designer of the "MVZ im. M.L. Mil, made a decision to stop developing the Mi-28A at the final stage of state testing and to concentrate all efforts and financial capabilities on developing the Mi-28N ("N" – night) combat helicopter – ROC "Avangard-2" – round-the-clock and all-weather, with a fundamentally new integrated fifth-generation onboard equipment complex.

Tests . The first experimental Mi-28N helicopter was built in August 1996 and made its maiden flight on November 14, 1996 (test pilot V.V. Yudin and navigator S.V. Nikulin), and from April 30, 1997 it began undergoing factory flight tests. Four years later, the Mi-28N entered state joint tests (2001). Given the great need for military vehicles of this type, the RF Air Force command accepted the Mi-28N as the main promising combat helicopter of the future in 2002, without waiting for the tests to be completed. In June 2005, the second experimental prototype Mi-28N began the testing program. On March 4, 2006, after the successful completion of the first stage of state joint tests, the state commission chaired by the Commander-in-Chief of the Russian Air Force, General of the Army V.S. Mikhailov, issued a conclusion on the release of the pilot batch of Mi-28N. In May 2006, the first serial Mi-28N, aircraft No. 32, joined the state tests. The state joint tests of the Mi-28N were completed on December 26, 2008, with the signing of the act of their completion. Two experimental and seven pre-production helicopters took part in the state tests. On October 15, 2009, by order of the President of Russia, the Mi-28N was officially accepted into service as the main attack helicopter.

Mi-28N helicopters, tail numbers 09 and 10, yellow, summer 2012 (photo by A.Blogin, http://ruforces-com.livejournal.com).

Mi-28N built in 2012 at the Rostvertol airfield, Rostov-on-Don, March 9, 2012 (photo by Mikhail Mizikaev, http://russianplanes.net/).

The first prototype Mi-28N - helicopter OP-1, tail number 014 after modifications at the MAKS-2003 air show, August 23, 2003 (photo by Flavien Breitenmoser, http://www.airliners.net).

The Mi-28N helicopter is a prototype of the Mi-28NE helicopter that took part in demonstration flights in India at the MAKS-2011 air show on August 16-21, 2011 (photo - VLAS, http://militaryrussia.ru/forum).

Author: DIMMI Created: 16.04.2011 22:50:38 Comments: 152 READ THE FULL ARTICLE

VTT-1 Swift

DATA AS OF 2023 (standard replenishment)
VTT-1 / T-67 "Strizh" / product 295

★★★

A small helicopter-mounted remote-controlled anti-submarine torpedo. Developed by the design bureau of the Dagdizel plant based on the AT-1 aircraft torpedo with a remote control system installed on it. The torpedo was launched from a helicopter hovering over the water at an altitude of 10-15 m. The torpedo was created and tested in 1967 (according to the Central Research Institute Gidropribor) and accepted into service in 1970.

The torpedo was manufactured by the Dagdizel plant (Kaspiysk, Dagestan) until 1978; a total of 73 torpedoes were produced.

Use of the VTT-1 torpedo from the Ka-25PLS anti-submarine helicopter (aviaru.rf).

Author: DIMMI Created: 18.01.2009 00:30:18 Comments: 1 READ THE FULL ARTICLE

APR-3 Oryol

DATA AS OF 2011 (standard replenishment)
APR-3 "Orel" / "Orel-M" / product 473
APR-3E "Orel-M"
APR-3M / APR-3ME "Orel-M"
★★★

Air-launched anti-submarine rocket torpedo. Developed by a cooperation of enterprises headed by NIIPGM (later renamed to GNPP "Region", now part of the Tactical Missile Armament Corporation) on the basis of and in parallel with the APR-2 torpedo . Chief Designer - M. Lisichko. Development began in 1969. During the development process, the project was repeatedly adjusted and eventually entered State testing as the "Orel-M". Development of the torpedo was completed in 1990. The APR-3 "Orel-M" torpedo was accepted into service in 1991 (in 1990 according to other data).

APR-3EUD torpedo on display at the IMDS-2003 exhibition, St. Petersburg (photo by A.V. Karpenko, "Nevsky Bastion").

Author: DIMMI Created: 16.02.2011 21:34:17 Comments: 2 READ THE FULL ARTICLE

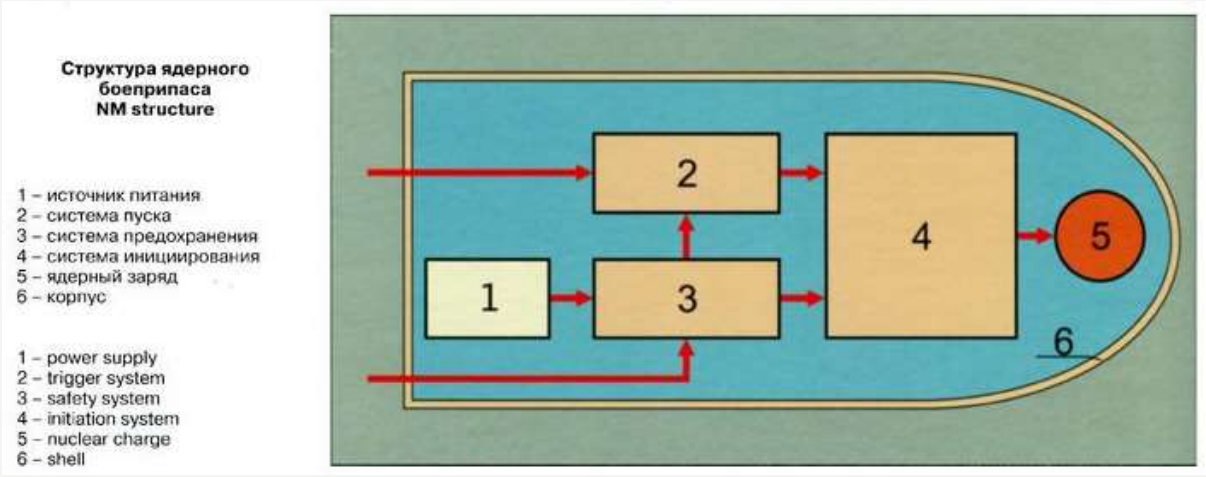
The design of nuclear weapons

The structure of nuclear munitions

A short, not very scientific article about the structure of nuclear munitions. There are no plans to reveal any terrible secrets here - just a short excursion for neophytes of nuclear weapons. So, let's begin...

A nuclear warhead, an atomic bomb, a missile with a nuclear warhead (WCh) carry a nuclear munition - i.e. a device that contains an atomic or thermonuclear charge and is capable of exploding at the right time. Due to the fact that nuclear munitions are weapons of mass destruction, their use is considered an extreme measure. For example, according to the nuclear doctrine of Russia, the use of nuclear weapons is possible only if there is a threat to the existence of the Russian Federation, as well as a threat to the destruction of the strategic nuclear deterrence forces of the Russian Federation.

Of course, nuclear munitions can be structured by the type of charge - into atomic (less powerful) and thermonuclear (more powerful).
And, of course, by types of carriers:
- ballistic missiles of strategic forces and military missile troops
- air-to-ground and surface-to-surface cruise missiles of different ranges
- bombs
- torpedoes
- artillery shells
- special weapons systems
- air-to-air and surface-to-air missiles
- anti-missile systems



Schematic diagram of a nuclear weapon (source - VNIIA)

Author: DIMMI Created: 12.11.2022 15:59:29 Comments: 1 READ THE FULL ARTICLE

X-15 / RKV-15 - AS-16 KICKBACK

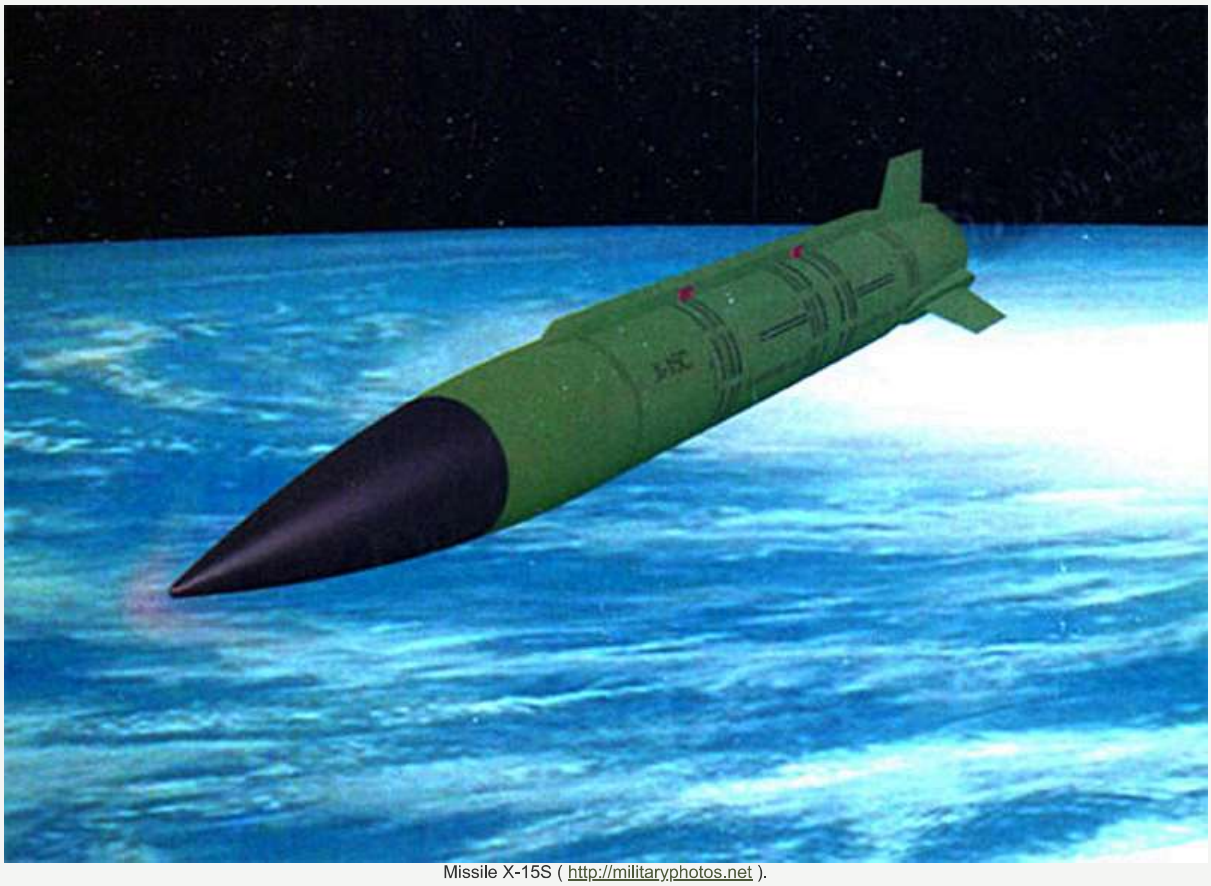
DATA FOR 2022 (standard update)
X-15 / RKV-15 / product 115 / 9A2001 - AS-16 KICKBACK
X-15S
★★★

Tactical strike aeroballistic guided missile. The development of the missile, similar in principle to the SRAM missile (USA), was conducted by the Raduga Design Bureau since 1974 (source) under the general supervision of Chief Designer I.S. Seleznev.

In 1978, prototypes of the missile were manufactured and serial production of the missile was launched at the Dubna Machine-Building Plant. In 1986, the missiles began to arrive in Long-Range Aviation units. Due to the delay in the refinement, only a few dozen of the last serial Tu-22M3s were equipped with the missile complex. Modification of previously produced aircraft was not carried out. The refinement of the complex also delayed the development of the missiles by combat crews - only in December 1988, the first launches were carried out by pilots of the 200th TBAP.

The missile was accepted into service in 1988 and was supplied to the 184th Guards Heavy Bomber Aviation Regiment and the 1230th (now the 121st Guards) Heavy Bomber Aviation Regiment on Tu-160 aircraft, as well as to three regiments of the 37th Air Army of the Supreme Command on Tu-22M3 aircraft. The missile was first publicly shown in March 1992 at a demonstration of equipment for the heads of the CIS countries in Machulishchi (Belarus).

The purpose of the basic model of the Kh-15 missile is to destroy stationary area targets - military-industrial facilities, Air Force and Air Defense bases, radar stations, command posts, etc. Including for creating a gap in the enemy's air defense system.



Missile X-15S (http://militaryphotos.net).

Author: DIMMI Created: 13.02.2009 00:54:01 Comments: 24 READ THE FULL ARTICLE

NIR Echo

DATA FOR 2019 (in progress)
Research and development project "Echo"
★

Research and development work on defining the appearance of promising strategic air attack weapons. The work was conducted from 1968 to 1970 by Research Institute-2 (GosNIIAS). The research involved comparing supersonic cruise, subsonic cruise and air-to-ground ballistic missiles with the aim of defining the appearance of promising strategic missiles of a similar type for arming the long-range aviation of the USSR Air Force. The research project also worked out the appearance of a promising airborne anti-radar strike complex (*history - Markovsky*).

One of the proposals developed within the framework of the research project "Echo" was the idea of "counter detonation" of a cruise missile warhead when it is hit by antiaircraft or airborne interception systems. It was believed that during a massive attack over the territory of a potential enemy, such an impact on air defense / AWACS, as well as the general defeat of the enemy's territory, would be great. According to E.A. Fedosov, it was the "touch-me-not missile factor" that opened the way to the development of such weapons systems in the USSR.

As a result of the research, it was established that the use of relatively inexpensive long-range subsonic cruise missiles with nuclear warheads, due to stealth and increased accuracy, in the conditions of the air defense system of a potential enemy can be very effective. The enemy's air defense system could be overcome due to the massive use of cruise missiles with flight echeloning in time. The stealth of such cruise missiles could be achieved due to their size, design features, as well as due to low-altitude flight with terrain following. In 1971, relying, among other things, on the results of the Echo research, the Raduga Design Bureau came up with an initiative to create such a missile, but mainly citing the low performance characteristics of the proposed missile, the USSR Ministry of Defense refused to create such a missile.

After the intensification of work on the ALCM air-launched cruise missile system in the USA in 1975, the leadership of the USSR Ministry of Defense decided to create a similar missile system. The USSR Council of Ministers Resolution on the creation of air-launched (Kh-55, MKB Raduga), sea-launched and land-launched cruise missile systems was adopted on December 8, 1976.

Author: DIMMI Created: 21.04.2019 13:57:23 Comments: 5 **READ THE FULL ARTICLE**

KTRV/GZUR hypersonic missile (project)

DATA FOR 2020 (standard update)
KTRV/GZUR hypersonic missile (project)
★★

Hypersonic cruise missile / hypersonic guided missile (GZUR) project. Research and development work on the hypersonic cruise missile was started by the Dubna division (former MKB Raduga) of the Tactical Missile Weapons Corporation as of August 2011. The General Designer and General Director of the Tactical Missile Weapons Corporation (TRV) is Boris Obnosov. By December 2017, the source spoke of a joint development by the Dubna MKB Raduga and the head office of KTRV in Korolev.

It is possible that the results of tests on the topic of R&D "Kholod-2" and the experience of creating the experimental hypersonic vehicle "Igla" (Baranov Central Institute of Aviation Motors) will be used in the creation of the new missile.

On 23.04.2013, the media reported that by the beginning of summer 2013, a target program for the creation of hypersonic weapons by the TRV corporation would be developed: "A permanent working group has been formed on the basis of the corporation, within which there are 10 subgroups in various areas." In the summer of 2013, it is planned to defend the program at the Military-Industrial Complex under the Government of Russia (source).

On 28 August 2013, Russian media reported that "a hypersonic missile has been created by the TRV corporation, but so far it has only flown for a few seconds" - this was a free paraphrase of B. Obnosov's statement at the MAKS-2013 air show that missiles had already been created in Russia that could fly at a speed of 4.5M for a few seconds (apparently referring to the tests of the Kh-90 and Kholod missiles in the 1980s and 1990s).

The name "GZUR" was first mentioned on 22.12.2017 in a source - here information is also provided that the missile is probably undergoing testing and from 2020 it is planned to begin serial production of the missile at a rate of up to 50 units per year.

Author: DIMMI Created: 19.08.2011 14:53:28 Comments: 10 **READ THE FULL ARTICLE**

K-22 complex, X-22 missile - AS-4 KITCHEN

DATA FOR 2020 (in progress)
Complex K-22 "Burya" / D-2, missile Kh-22 - AS-4 KITCHEN
Complex K-22M / D-2M, missile Kh-22M - AS-4 KITCHEN
★★

Aircraft missile system with a cruise missile (anti-ship, area-attack and later anti-radar). Development of the K-22 system with the "105" carrier aircraft (future Tu-22) was started by the Dubna branch of OKB-155 (since 30.04.1966 MKB "Raduga") according to the Resolution of the USSR Council of Ministers No. 426-201 of 17 June 1958. Chief Designer - A. Ya. Bereznyak.

Initially, the system was developed with two versions of cruise missiles: with a missile for hitting high-contrast point (including moving) targets, as well as with a missile for hitting area targets with pre-known coordinates. The development of the control and guidance system for the K-22U complex was carried out by KB-1 of the USSR State Committee for Radio Electronics (chief designer V.M. Shabanov, deputies P.G. Terezovsky and P.S. Karzhavin) in three versions:

- with an autonomous inertial path counter PSI
- with active radar homing head
- with a passive radar homing head. The passive homing head had to be aimed at a wide range of shipborne radio-technical devices - radars, communications and navigation equipment.

By the Decree of the Council of Ministers of the USSR dated July 21, 1959, OKB-155 was ordered to build 2 Kh-22 missiles for testing in the 4th quarter of 1959 and 3 missiles in the 1st quarter of 1960, and also to present the entire complex for joint tests with the Air Force in the 1st quarter of 1961.

The first samples of missiles for testing were manufactured in 1962 by Plant No. 256 of the State Aviation Committee. Testing of the missiles began in the same 1962 from a specially converted Tu-16K-22 carrier aircraft. Testing of the Kh-22 missiles encountered many difficulties and was delayed. State tests of the K-22 complex with the Kh-22 missile with an active radar homing head and a standard Tu-22K carrier with a PN radar were completed only in 1967. In the same 1967, the K-22 complex with the Tu-22K carrier aircraft was accepted into service with the Long-Range Aviation of the USSR Air Force. Serial production of Kh-22 missiles was launched at Plant No. 256 (renamed the Dolgoprudny Machine-Building Plant in 1966). Later, missile production was also carried out at the Ulyanovsk Machine-Building Plant and at other plants.

The creation and testing of the Kh-22PSI missile with the PSI inertial guidance system dragged on and the missile was accepted into service only in 1971.

In 1971, a group of specialists from the Raduga Design Bureau headed by A. Ya. Bereznyak was awarded the USSR State Prize for the creation of the Kh-22 missile.

A separate Resolution of the USSR Council of Ministers was adopted in 1962 on the development of an anti-radar version of the missile, but work on creating this version of the Kh-22 missile proceeded with great difficulty and was completed later.

Suspension of the Kh-22 missile under the Tu-22KD (Yakubovich N., Supersonic bomber Tu-22. Issue 16 "Armada". Moscow, Eksprint, 1999)

Author: DIMMI Created: 17.02.2009 00:19:02 Comments: 11 READ THE FULL ARTICLE

S-70 Okhotnik-B

DATA FOR 2018 (standard update)
Heavy attack UAV NIR "Okhotnik-B" S-70
★★★

Heavy strike unmanned aerial vehicle. The Okhotnik research project to study the possibility of creating a strike UAV weighing up to 20 tons in the interests of the Russian Air Force was developed by the Sukhoi company (OAO Sukhoi Design Bureau). The Defense Ministry's plans to acquire a strike UAV of this class were first announced at the MAKS-2009 air show in August 2009. According to Mikhail Pogosyan's statement in August 2009, the design of the new strike unmanned complex was to become the first joint work of the relevant divisions of the Sukhoi Design Bureau and MiG (the Skat project). The media reported on the conclusion of a contract for the implementation of the Okhotnik R&D with the Sukhoi company on July 12, 2011. In August 2011, the unification of the relevant divisions of RAC MiG and Sukhoi for the development of a promising attack UAV was confirmed in the media, but the official agreement between MiG and Sukhoi was signed only on October 25, 2012.

The technical specifications for the attack UAV were approved by the Russian Ministry of Defense in early April 2012. On July 6, 2012, the media reported that the Sukhoi company was selected by the Russian Air Force as the lead developer. An unnamed source in the industry also reported that the attack UAV developed by Sukhoi will also be a sixth-generation fighter. As of mid-2012, it is expected that the first prototype of the attack UAV will begin testing no earlier than 2016. It is expected to enter service by 2020. In 2012, JSC VNIIRA conducted a selection of patent materials on the Okhotnik-B topic, and in the future, it was planned to create landing approach and taxi navigation systems for heavy UAVs on behalf of JSC Sukhoi (source).

On October 3, 2013, the media reported that the first prototype of the Sukhoi Design Bureau's heavy attack UAV would be ready in 2018. On May 30, 2014, Deputy Chairman of the Military-Industrial Complex under the Government of Russia Oleg Bochkarev confirmed that the first flight of the UAV is expected in 2018. The first model of the device was created in 2014 (source).

In 2017, it was reported that the UAV demonstrator was manufactured at the Chkalov NAPO in Novosibirsk and would make its first flight in 2018. On June 28, 2018, the media reported the first rollout of the S-70 UAV at the Chkalov NAPO in Novosibirsk and the beginning of the final stage of ground tests of the UAV. At the same time, it was reported that the first flight of the S-70 would take place in 2019. Later, it was reported that in November 2018, the UAV began running along the NAPO runway with acceleration to a speed of 200 km/h.

Probably a model of the S-70 NIR Okhotnik-B UAV (Russian Ministry of Defense poster, 2017)

Author: DIMMI Created: 08.07.2012 21:27:08 Comments: 29 READ THE FULL ARTICLE

X-59MK2 - AS-22

DATA FOR 2018 (in progress)

Missile X-59MK2 - AS-22

★★★

Air-launched cruise missile. The development of the missile was started by the Raduga Design Bureau (now part of the KTRV concern) presumably in the early 2010s on the basis of the Kh-59MK missile. The missile is designed to hit targets with pre-determined coordinates and is an analogue of the AGM-158 JASSM, Scalp EG/Storm Shadow and Taurus missiles (source). The missile design takes into account the requirements for reducing radar visibility, as well as ensuring the use of a missile with a suspension in the internal compartments of carrier aircraft.

In February 2018, during military tests of the Kh-59MK2 missiles, combat launches of missiles were successfully carried out in Syria from Su-57 carrier aircraft - this was announced on May 25, 2018 at the board meeting of the Ministry of Defense by Russian Defense Minister S.K. Shoigu.

Model of the Kh-59MK2 missile at the MAKS-2015 air show (photo by Said Aminov, https://saidpvo.livejournal.com).

Author: DIMMI Created: 03.06.2018 14:50:00 Comments: 4 READ THE FULL ARTICLE

X-59 Gadfly - AS-13 KINGBOLT

DATA FOR 2016 (standard update)
X-59 "Gadfly" / product "D-9" - AS-13 KINGBOLT

★★★

Heavy tactical guided missile. The missile was developed by the Raduga Design Bureau starting in 1980 (some sources say since 1973). The missile was developed using the technological reserve of the Kh-29T television guidance missile and using some solutions tested on the Kh-58 missile. The television guidance system imposed its own limitations on the missile's flight speed, related to the response speed of the guidance operator. The missile was intended for high-precision destruction of important tactical targets covered by air defense.

In 1982, tests of the Su-17M4-59 complex with the Su-17M4 carrier aircraft, the Kh-59 missile and the APK-9 hardware container began. This missile armament system had already been tested on the Su-24 bomber, but was not completed due to control defects. The Su-17M4 (No. 16-09) received from the Ministry of Defense was modified very quickly, within a little over a month, and by the end of October 1982 it was taken out for testing. The Kh-59 missile was suspended on the right under-fuselage unit using the AKU-58 ejection device, the container with the control equipment was located nearby on the left point. The test flight of the aircraft was carried out by the OKB test pilot A.A. Ivanov on November 1, 1982. As part of the factory testing stage, 86 flights and seven practical missile launches were performed during 1982-1983. Testing of the Kh-59 on the Su-17M4 began on September 28, 1983. Then followed special flight tests at the Air Force State Research Institute, according to the program of which another 64 flights and nine launches were carried out, although only 39 flights were recognized as qualifying. The flights were performed by the OKB pilot I.V. Votintsev, from the Air Force State Research Institute V.A. Oleynikov, Yu.V. Zhukov and V.I. Mostovoy (*history - Markovsky*) flew.

Notable successes were achieved during some firings: hits on the target shield were achieved with an accuracy of one and a half meters from the "cross", however, the Kh-59 could only be used during the day, with good visibility and target contrast (otherwise it was impossible to really see it on the screen, let alone carry out targeting). The provided autonomous control for entering the target area with its subsequent search turned out to be not very reliable, inferior to the manual mode along the entire flight route with the missile being launched onto the target. During the tests, the best results were achieved with targeting using noticeable linear landmarks, such as a river, railroad or highway leading to the target, otherwise its detection was problematic. There was a case when, during the next stage of testing on the Su-24M, the shooting test was in question - the target was impossible to find in the hopelessly flat expanses of the steppe near Akhtubinsk. Having shown ingenuity, the test team borrowed a tractor from a neighboring collective farm, ploughing a strip several kilometers long in the direction of the target. The dug up black earth, stretching towards the target, looked like a contrasting clear line on the targeting screen and became a reliable "pointing finger",allowing the problem to be solved (*(source - Markovsky*).

Tests of the Kh-59 missiles with the Su-17M4 carrier aircraft were successfully completed by 1984 (source) and the missile was recommended for equipping fighter-bombers of the USSR Air Force. The use of the Kh-59 missile on the Su-17M4, being a very large product of more than five meters in length, the missile placed on the fuselage units almost touched the ground. Tests of this missile system showed its prospects, but this version of the weapon was not transferred to the Su-17M4 for serial production. A positive decision was hindered by the low reliability of the system, which suffered from many defects. The Ministry of Defense was in favor of introducing the Kh-59, but with the condition of further increasing the range. The design bureau began working on the documentation for laying in the series, however, in the end, they decided to limit themselves to using the missile on the Su-24M bomber, where the functions of the guidance operator were performed by the navigator (*source - Markovsky*).

In 1984, the developers were awarded the USSR State Prize for the creation of the "high-precision aviation complex Kh-59". The Kh-59 missile was probably adopted by the USSR Air Force in 1984-1985. Serial production of the missile was carried out at the Smolensk Aviation Plant.

Guided missile X-59 - AS-13 KINGBOLT (http://www.modellmix.su).

Author: DIMMI Created: 01.04.2016 21:42:14 Comments: 7 READ THE FULL ARTICLE

BrahMos complex, SK310 / PJ-10 missile

DATA FOR 2018 (standard update)
BrahMos complex / BrahMos, SK310 missile / BrahMos PJ-10
ROC "Alliance"
BrahMos block I missile
BrahMos block II missile
BrahMos block III
missile SK-310A / BrahMos-A missile (aircraft)
★★★★

Anti-ship cruise missile / cruise missile for firing at ground targets. Analogue of the domestic cruise missile "Yakhont" / "Onyx" developed by NPO "Mashinostroyeniye" (OKB-52 V.N.Chelomey) produced and developed for various platforms by the joint Russian-Indian enterprise "BrahMos Aerospace Pvt. Ltd." (established on 12.02.1998). In 1999, work on the complex began in related design bureaus (for example, NPO "Iskra"). The missile model was first shown at the MAKS-2001 air show. Testing of BrahMos missiles began no later than 2001, and their joint serial production began in January 2004. The sea-based BrahMos missile in the anti-ship cruise missile version (for surface ships) was accepted into service with the Indian Navy in 2006. The delivery of land-based missile systems to Indian coastal defense units began in 2007.

It is planned to accept into service different versions of the missiles (by basing) - land-based (wheeled transporter with vertical launch container, accepted into service), air-based version (carriers - Su-30MKI and other aircraft of the Indian Air Force), a complex for ships (accepted into service) and submarines of the Indian Navy. The Indian side is engaged in the creation of the control system of the complex. Some components for the BrahMos missiles are produced by NPO Strela (Orenburg, missile production). The possibilities of joint production as of 2009 are estimated at 200 anti-ship cruise missiles per year (2005-2006 - 100 units per year). The complex is offered for export. Many characteristics are identical to those of the Yakhont/Onyx anti-ship missiles .

Launch of the BrahMos block III missile at the Pokharan test site in Rajasthan, 18.11.2013 (photo - Indian Ministry of Defense via http://ria.ru).

Author: DIMMI Created: 05.09.2010 01:54:01 Comments: 61 READ THE FULL ARTICLE

X-45 Lightning

DATA FOR 2018 (standard update)
The Kh-45 Molniya missile is a long-range air-launched anti-ship missile. The design of the Kh-45 missile using the developments of the Kh-33 missile , which was created by the P.O. Sukhoi Design Bureau to arm the T-4 carrier aircraft , began in 1968 (*source - Exposition*) at OKB-155 (MKB Raduga), where work on the Kh-45 was headed by A.Ya. Bereznyak, G.K. Samokhvalov and V.A. Larionov (chief designer). In January 1970, a preliminary design for

the missile was presented to the customer. The missile was intended to destroy aircraft carriers as part of an aircraft carrier strike group or a formation of individual ships, as well as to destroy ground-based radio-contrast targets. In 1964, it was planned to deploy the Kh-33 missile production at Plant No. 51 named after Lavochkin, but in 1965, by decision of the Military-Industrial Complex, it was ordered to prepare serial production of the missile by the enterprises of the USSR Ministry of Aviation Industry under the leadership of Plant No. 51. According to the project of the Kh-45 missile, the Raduga Design Bureau, even before the design was completed - in 1969 - began to transfer documentation to the Dubna Machine-Building Plant. An experimental series of missiles was in production. According to some sources , missile tests were started, but were not completed. The development of the project was terminated in 1975 (*source - Exposure*). By default, the data of the Kh-45 missile.
★★★

Model of the X-45 missile in the open part of the exposition of the Raduga Design Bureau Museum, photo from the exposition in the Dubna Museum of Archeology and Local History (10/21/2017, flateric).

Author: DIMMI Created: 14.02.2013 17:40:39 Comments: 33 READ THE FULL ARTICLE

X-50 / product 715 / 9-A-5015

DATA FOR 2017 (in progress)
Missile Kh-50 / Kh-SD / "product 715" / 9-A-5015
★★★

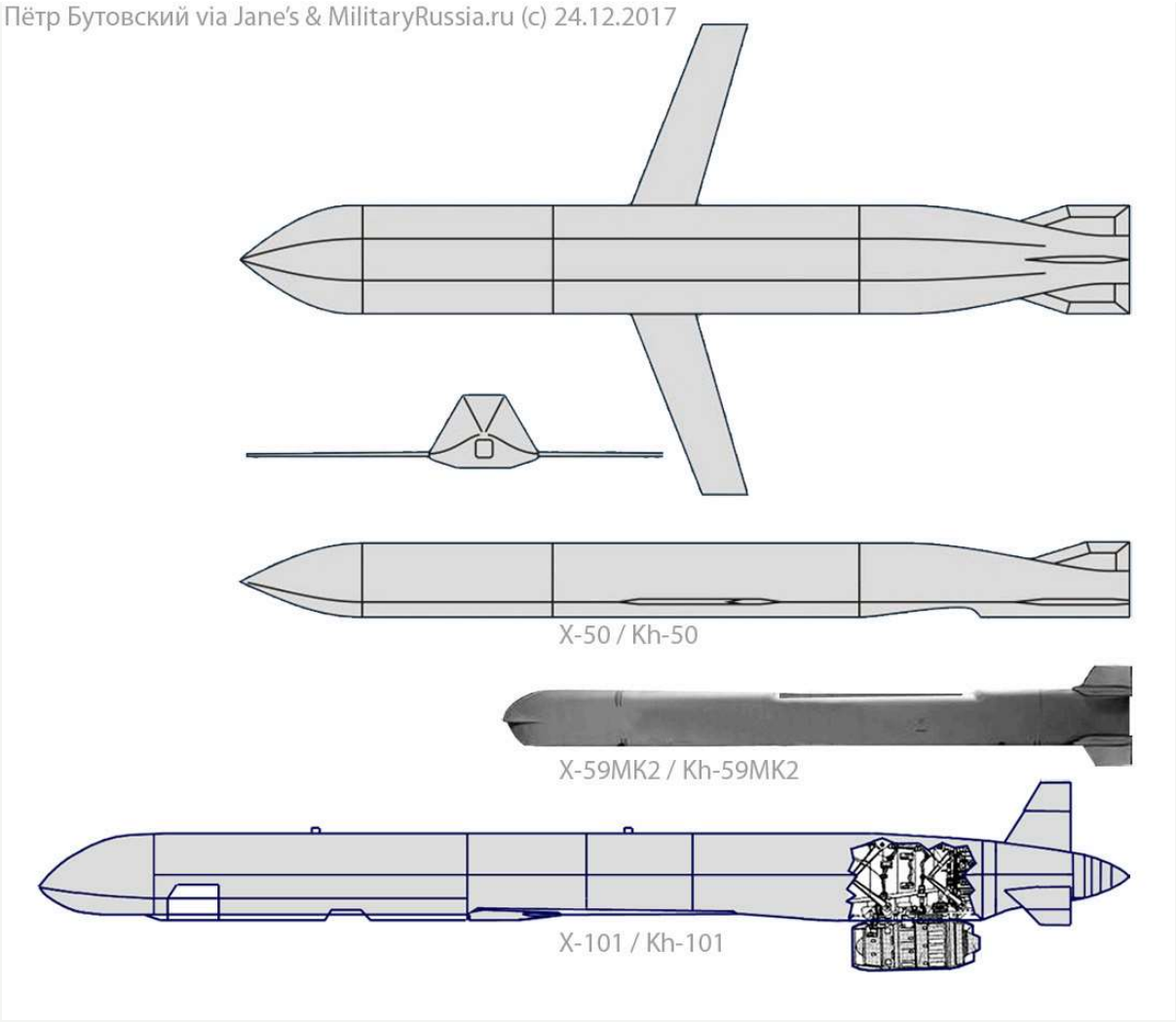
Medium-range air-launched cruise missile (presumably). Development of the missile was started by MKB Raduga (now part of the KTRV concern) in the early 1990s (source). It is believed that the missile is similar in capabilities to the AGM-158 JASSM missile (source).

On December 24, 2014, PJSC Tupolev and GosMKB Raduga signed contract No. 14181873270320101040002O4/450/4503M/SChOKR/2014 for the implementation of R&D work "45.03M-715" (source). Probably, the R&D work involves a set of works to ensure the use of the "article 715" missile developed by GosMKB Raduga from the Tu-22M3M/"45.03M" carrier aircraft. Completion of the R&D work is expected in the fall of 2018.

Static and ground tests of the "product 715" missile were apparently conducted in 2016 (source , source).

According to Western data, serial production of the missile is planned to be launched within the framework of the state armament program for 2018-2027 (source).

The name "Kh-50" in conjunction with the name "Kh-SD" was first published on 22.12.2017 (source).



A diagram of the new Russian Kh-50 air-launched cruise missile, based on a patent from JSC Tactical Missile Weapons Corporation (KTRV), with added images of the Kh-59MK2 and Kh-101 missiles (Pyotr Butovsky via Jane's and MilitaryRussia.ru, 12/24/2017).

Author: DIMMI Created: 17.11.2017 07:04:20 Comments: 11 READ THE FULL ARTICLE

X-35 / 3M24 - SS-N-25 SWITCHBLADE / AS-20 KAYAK

DATA AS OF 2016 (standard replenishment)
Complex "Uran", missile Kh-35 / 3M24 / "article 78" - SS-N-25 SWITCHBLADE
Complex "Uran", missile Kh-35 / 3M24 / "article 78" - AS-20 KAYAK / AS-X-20 Harpoonski
★★

Anti-ship cruise missile. Preliminary development of the small-sized anti-ship missile project was conducted by Zvezda Design Bureau starting in 1977. The decision to create a missile for the Uran ship-based missile system was made by the Resolution of the CPSU Central Committee on March 16, 1983, after studying the experience of using the Exocet anti-ship missile during the Anglo-Argentine conflict (May 1982). The development was carried out by Zvezda Design Bureau (former OKB-455, now part of KTRV), General Designer - V.N. Bugaisky (later - V.G. Galushko). Chief Designer of the system - Georgy Ivanovich Khokhlov. Chief Designer of the direction (as of 2015) - Nikolay Anatolyevich Vasiliev (source). The first version of the missile's preliminary design was reviewed in 1983 and was sent back for revision due to non-compliance with the requirements for the radar homing head characteristics (source). According to sources, another Resolution on the development of the complex was adopted by the USSR Council of Ministers on April 16, 1984 (source).

Tests . The first launch from a ground-based launch pad was planned for November 4, 1985, but due to an automatic failure (incorrect information was given about the opening of the TPK covers), the launch did not take place. The first successful launch was carried out (on the second attempt on this day) on November 5, 1985 at the test site of the 31st Test Center of the USSR Ministry of Defense (Feodosia, Crimea). According to the launch program, the missile was supposed to fly 40 km. The missile successfully exited the TPK, flew about 50 meters and fell into the sea (source). This launch is considered the first launch in the flight design testing program of the Kh-35 anti-ship missile.

The first public demonstration of the missile took place at the Mosaeroshow-1992 exhibition.

The Kh-35 missile is designed to destroy missile, torpedo, artillery boats, surface ships with a displacement of up to 5,000 tons and sea transports.

The Kh-35E missile without a booster engine at one of the naval exhibitions in St. Petersburg, 2000s (http://army.lv/).

Author: DIMMI Created: 02.02.2016 13:28:30 Comments: 2 READ THE FULL ARTICLE

K-37 / R-37 / RVV-BD - AA-13 ARROW

DATA AS OF 2017 (standard replenishment)
K-37 / R-37 / "product 610" - AA-X-13 ARROW
K-37M / RVV-BD/ "product 610M"-AA-13 ARROW
★★★

Long-range air-to-air missile. In 1981, a technical proposal was submitted for a new MiG-31M interceptor with K-37 missiles. Development of a more advanced missile similar to the K-33 missile to arm the MiG-31M interceptor was started by the Vympel State Design Bureau in accordance with the Resolution of the USSR Council of Ministers dated April 8, 1983. The preliminary design of the K-37 missile was approved in 1983. The first flight of the MiG-31M prototype (serial No. 05-01-01) took place on December 21, 1985. Missile testing began in 1988 with autonomous ballistic missile launches without a guidance system (10 launches). In 1989, software missiles without a guidance system (4 launches) participated in the testing - flying under the control of an autopilot according to a program. In the same 1989, tests of missiles with a guidance system began (2 launches).

The first public appearance was the Minsk demonstration of new aviation equipment (Machulishchi, March 1992) - the missiles were shown on the underfuselage suspension of the MiG-31M (6 missiles on AKU-610 under the fuselage). The missile adopted many features of the prototype - the K-33 / AA-9 missile . In April 1994, Russian President B.N. Yeltsin congratulated the creators of the missile on the successful destruction of an air target at a record range of 304 km. Missile tests continued until 1997.

Probably, after 1997, due to the disruption of cooperation with Ukrainian enterprises that were involved in the creation of the missile guidance systems, a decision was made to develop a guidance system using only Russian components.

As of 2007, the Tactical Missiles Corporation (KTRV), represented by the Vympel State Design Bureau, was developing the RVV-BD missile, which is almost a complete analogue of the K-37 missile. It was planned to complete state tests of the missile by the end of 2011. It was decided to begin serial production as of August 2011. Preparations for serial production of the missile were underway throughout 2011. On 13 February 2012, Air Force Commander-in-Chief A. Zelin announced that a new long-range missile for MiG-31BM aircraft was in the final stage of testing. The missile will be accepted into service in the near future.

In 2014, the RVV-BD missile was accepted into service by the Russian Air Force, and its serial production was officially launched (KTRV Bulletin, No. 8 / 2015). As of autumn 2017, there is no information about the missile's receipt by the troops.

Launch of the K-37/RVV-BD missile cruise engine - AA-13 ARROW (drawing by Alexander Yartsev, 2014, source).

Author: DIMMI Created: 25.01.2009 00:58:18 Comments: 9 READ THE FULL ARTICLE

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